

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
2 March 2006 (02.03.2006)

PCT

(10) International Publication Number
WO 2006/022802 A1

(51) International Patent Classification:
H04B 1/69 (2006.01)

(21) International Application Number:
PCT/US2005/000653

(22) International Filing Date: 10 January 2005 (10.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/535,392 9 January 2004 (09.01.2004) US

(71) Applicants (for all designated States except US):
MATSUSHITA ELECTRONIC INDUSTRIAL CO,
LTD [JP/JP]; 1006, Oaza Kadoma, Kadoma-shi, Osaka
571-8501 (JP). MO, Shaomin, Samuel [US/US]; 56 John
Court, Monmouth Junction, NJ 08852 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): GELMAN, Alexan-
der, D. [US/US]; 158 Pine Grove Road, Smallwood, NY
12778 (US).

(74) Agent: NIGON, Kenneth, N.; RatnerPrestia, P.O. Box
980, Valley Forge, PA 19482 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU,
ZA, ZM, ZW.

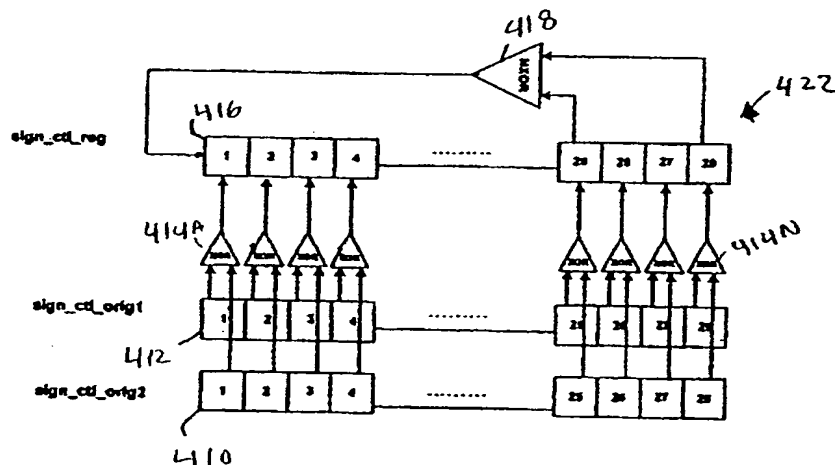
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: ULTRA WIDEBAND SCRAMBLER FOR REDUCING POWER SPECTRAL DENSITY



(57) Abstract: Scrambling methods for scrambling ultra wideband (UWB) data are disclosed. UWB data (420) having payload data and non-payload data is scrambled (422, 424) by shifting a first bit string (412) a first number of bits, shifting a second bit string (410) a second number of bits, combining (414A - 414N) the first and second shifted bit strings, generating (418) scrambler control bits (416) from the combined first and second shifted bit strings, and scrambling (424) at least a portion of the UWB data responsive to the scrambler control bits. According to another aspect, UWB data is scrambled by scrambling payload data using a pseudo-random number generator having a seed set of multiple seeds having low seed correlation, each seed within the seed set having a predefined number of bits, and selective applying random frame reversion (428, 430) to non-payload data and/or to entire frame of data.

Best Available Copy

WO 2006/022802 A1